

1999 Toyota RAV4

1999-2000 ACCESSORIES & EQUIPMENT Instrument Panels - Trucks

1999-2000 ACCESSORIES & EQUIPMENT**Instrument Panels - Trucks****DESCRIPTION & OPERATION**

WARNING: Deactivate air bag system before performing any service operation. See **AIR BAG RESTRAINT SYSTEMS** article. DO NOT apply electrical power to any component on steering column without first deactivating air bag system. Air bag may deploy.

GAUGES

Standard instrument clusters contain fuel and temperature gauges with telltale warning lights. Some optional instrument panels are equipped with a tachometer, oil pressure gauge and voltmeter. Gauge internal operating components use either a 2-terminal bimetallic strip type or a 3-terminal coil type. The 2-terminal type gauges are generally used on clusters without tachometers.

SWITCHES

All models contain hazard warning switch on instrument panel. All models use a combination switch for headlight, turn signal, wiper/washer, and cruise control switches. Combination switch is mounted on steering column. For testing and/or removal and installation procedures for combination switch components, see appropriate **STEERING COLUMN SWITCHES** article.

COMPONENT TESTS**A/T OIL TEMPERATURE SWITCH****RAV4**

1. Turn ignition switch to OFF position. Disconnect A/T oil temperature switch 1-pin connector. Switch is located on side of transaxle, near park/neutral position switch. Remove A/T oil temperature switch. Place probe end of switch and thermometer in a container of water.
2. Connect an ohmmeter between switch terminal and switch body. Heat water and check for continuity. With temperature at 284-302°F (140-150°C), continuity should exist. If continuity does not exist, replace switch.

A/T OIL TEMPERATURE WARNING LIGHT**RAV4**

Disconnect A/T oil temperature switch connector. Switch is located on side of transaxle, near park/neutral position switch. Using a jumper wire, connect switch connector terminal to ground. Turn ignition switch to ON position. A/T oil temperature warning light should be on. If warning light is off, check bulb and wiring harness. Repair as necessary.

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BRAKE FLUID LEVEL SWITCH

Remove cap and strainer from brake fluid reservoir. Disconnect brake fluid level switch connector. Check for continuity between brake fluid level switch terminals. With reservoir full (float up), continuity should not exist. With reservoir empty (float down), continuity should exist. If continuity is not as specified, replace brake fluid level switch.

BRAKE WARNING LIGHT

Disconnect brake fluid warning switch connector. Release parking brake. Using a jumper wire, connect brake fluid warning switch connector terminals together. Turn ignition switch to ON position. Brake warning light should be on. If brake warning light is off, check bulb and wiring harness. Repair as necessary.

BULB CHECK RELAY**Tacoma & 4Runner**

1. Bulb check relay is located on back of instrument cluster. See **Fig. 5**. Turn ignition switch to OFF position. Remove instrument cluster. Using a jumper wire, connect negative battery terminal to bulb check relay terminal "B". See **Fig. 1**.
2. Using another jumper wire, connect a 12-volt, 1.4-watt test light between positive battery terminal and bulb check relay terminal "C". Test light should be off. Connect another jumper wire between positive battery terminal and bulb check relay terminal "A". Test light should be on. If test light does not illuminate as specified, replace relay.

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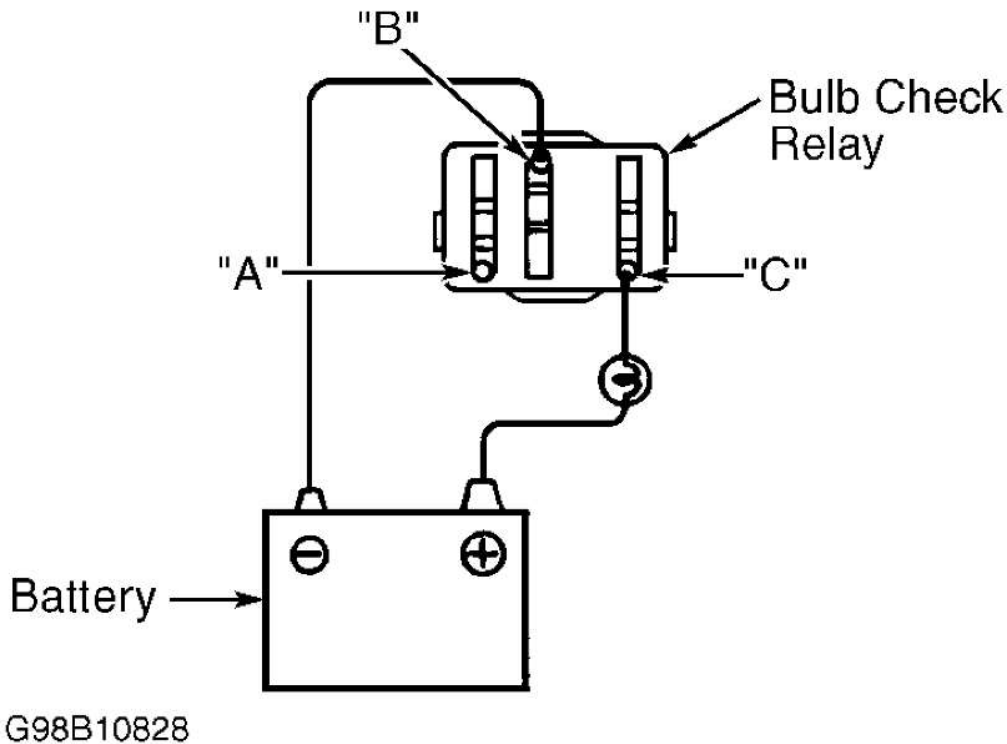


Fig. 1: Testing Bulb Check Relay (Tacoma & 4Runner)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DOOR COURTESY SWITCH

Land Cruiser, RAV4, Sienna & 4Runner

Turn ignition switch to OFF position. Locate door courtesy switch in door jamb. Check for continuity between door courtesy switch terminal and switch body. With switch pin released (switch ON), continuity should exist. With switch pin pushed in (switch OFF), no continuity should exist. If continuity is not as specified, replace door courtesy switch.

ENGINE COOLANT TEMPERATURE GAUGE & SENDER

Wiring Harness Operational Test

1. Disconnect coolant temperature sender connector. See **ENGINE COOLANT TEMPERATURE SENDER LOCATION** table. Turn ignition switch to ON position. Temperature gauge should indicate COOL. Turn ignition switch to OFF position. Connect a 12-volt, 3.4-watt test light between coolant temperature sender harness connector terminal and ground.

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- Turn ignition switch to ON position. Test light should be on and temperature gauge should slowly move to HOT. If gauge functions as specified, replace sending unit. If gauge does not function as specified, perform **TEMPERATURE GAUGE RESISTANCE TEST**.

Engine Coolant Temperature (ECT) Sender

- Turn ignition switch to OFF position. Disconnect ECT sender 1-pin connector. See **ENGINE COOLANT TEMPERATURE SENDER LOCATION** table. Drain cooling system and remove ECT sender. Place probe end of ECT sender and thermometer in a container of water. Connect an ohmmeter between ECT sender terminal and ECT sender body.
- Heat water and note resistance reading. See **ENGINE COOLANT TEMPERATURE SENDER RESISTANCE** table. If resistance is not as specified, replace ECT sender.

ENGINE COOLANT TEMPERATURE SENDER LOCATION

Application	Location
Land Cruiser	Top Front Of Engine
Sienna	Top Of Engine
RAV4	Rear Of Cylinder Head, Exhaust Side
Tacoma & 4Runner	
4-Cyl.	Right Side Of Engine, Under Intake Manifold
V6	Left Cylinder Head
Tundra	
V6	In Rear Of Intake Manifold
V8	In Front Water By-Pass Joint, Next To ECT Sensor

ENGINE COOLANT TEMPERATURE SENDER RESISTANCE

Application & Water Temp. °F (°C)	Ohms
Land Cruiser, Sienna, RAV4 & Tundra	
122 (50)	160-240
248 (120)	17-21
Tacoma & 4Runner	
122 (50)	234-314
248 (120)	24-31

Temperature Gauge Resistance Test

Turn ignition switch to OFF position. Remove instrument cluster. Using ohmmeter, check gauge resistance between appropriate terminals on back of instrument cluster. See **TEMPERATURE GAUGE RESISTANCE SPECIFICATIONS** table. See **Fig. 2 -Fig. 8**. If resistance is not as specified, replace temperature gauge. If resistance is as specified, repair open or short circuit in wiring harness.

TEMPERATURE GAUGE RESISTANCE SPECIFICATIONS

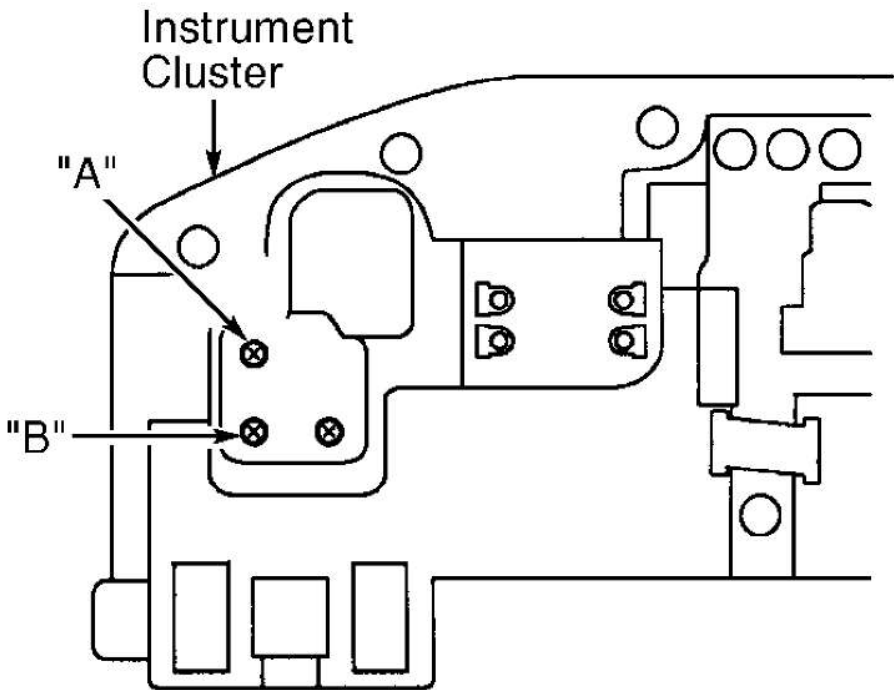
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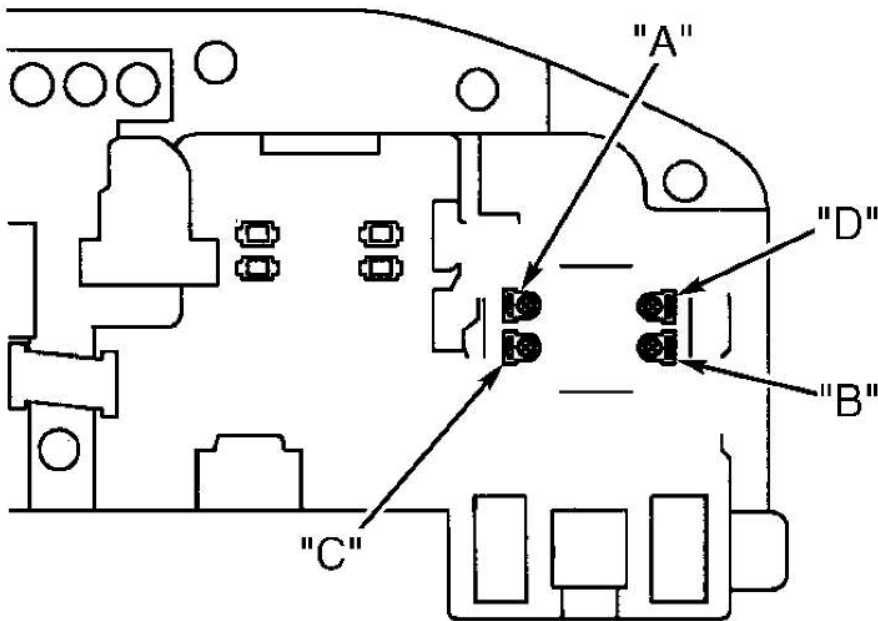
Application & Terminals	(1) Ohms
Land Cruiser	
"A" & "B"	227
RAV4	
"A" & "B"	54
"A" & "C"	176
"B" & "C"	230
Sienna	
"A" & "B"	176
"A" & "C"	54
"B" & "C"	230
Tacoma	
With Tachometer	
"A" & "B"	257
"A" & "C"	182
"B" & "C"	75
Without Tachometer	
"A" & "B"	139
"A" & "C"	75
"B" & "C"	214
Tundra	
With Tachometer	
"A" & "B"	56
"A" & "C"	136
"B" & "C"	211
Without Tachometer	
"A" & "B"	55
"A" & "C"	139
"B" & "C"	214
4Runner	
"A" & "B"	160
"C" & "D"	160
(1) Specification is approximate.	

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COOLANT TEMPERATURE GAUGE TERMINALS



FUEL GAUGE TERMINALS

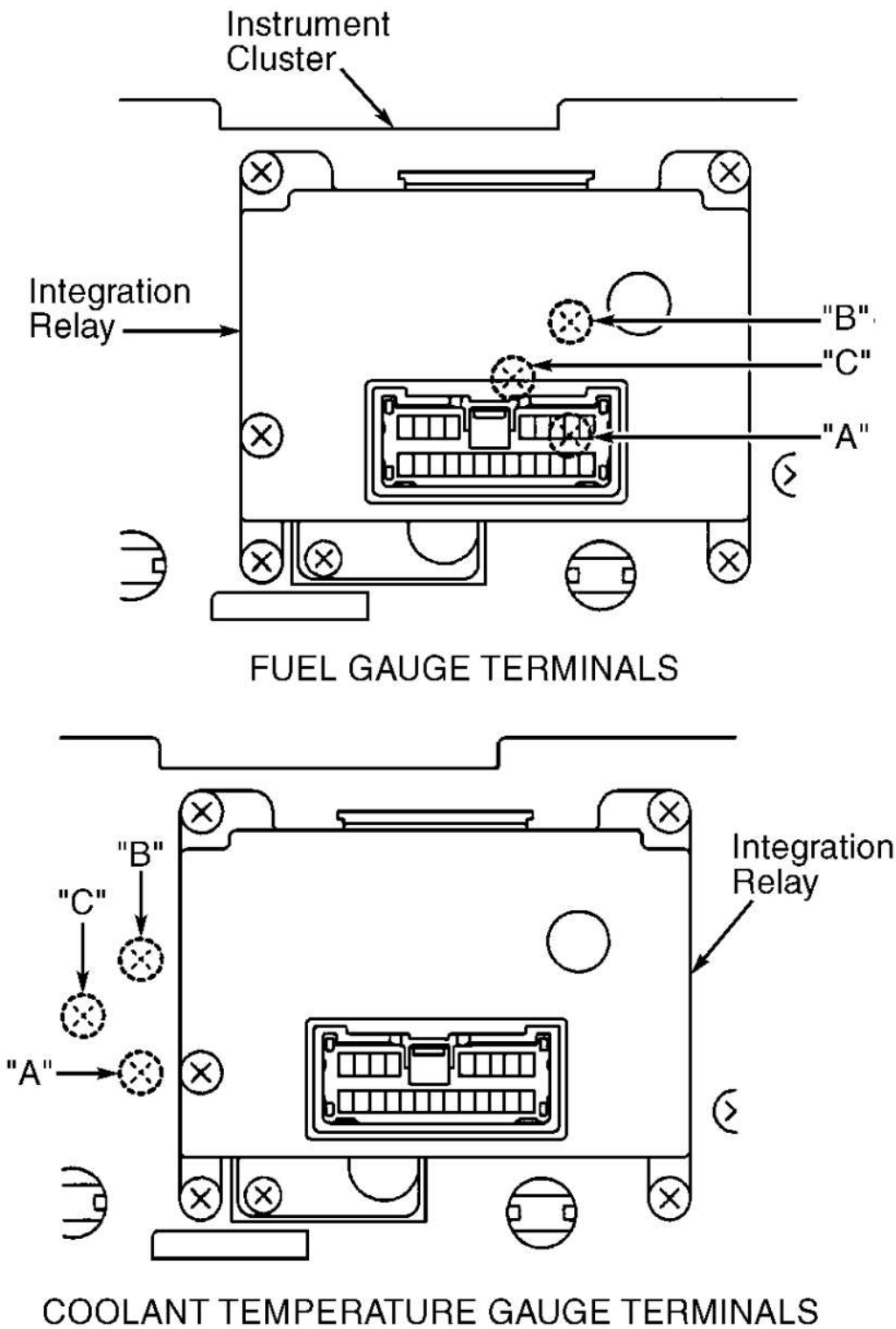
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Fig. 2: Identifying Fuel & Temperature Gauge Terminals (Land Cruiser)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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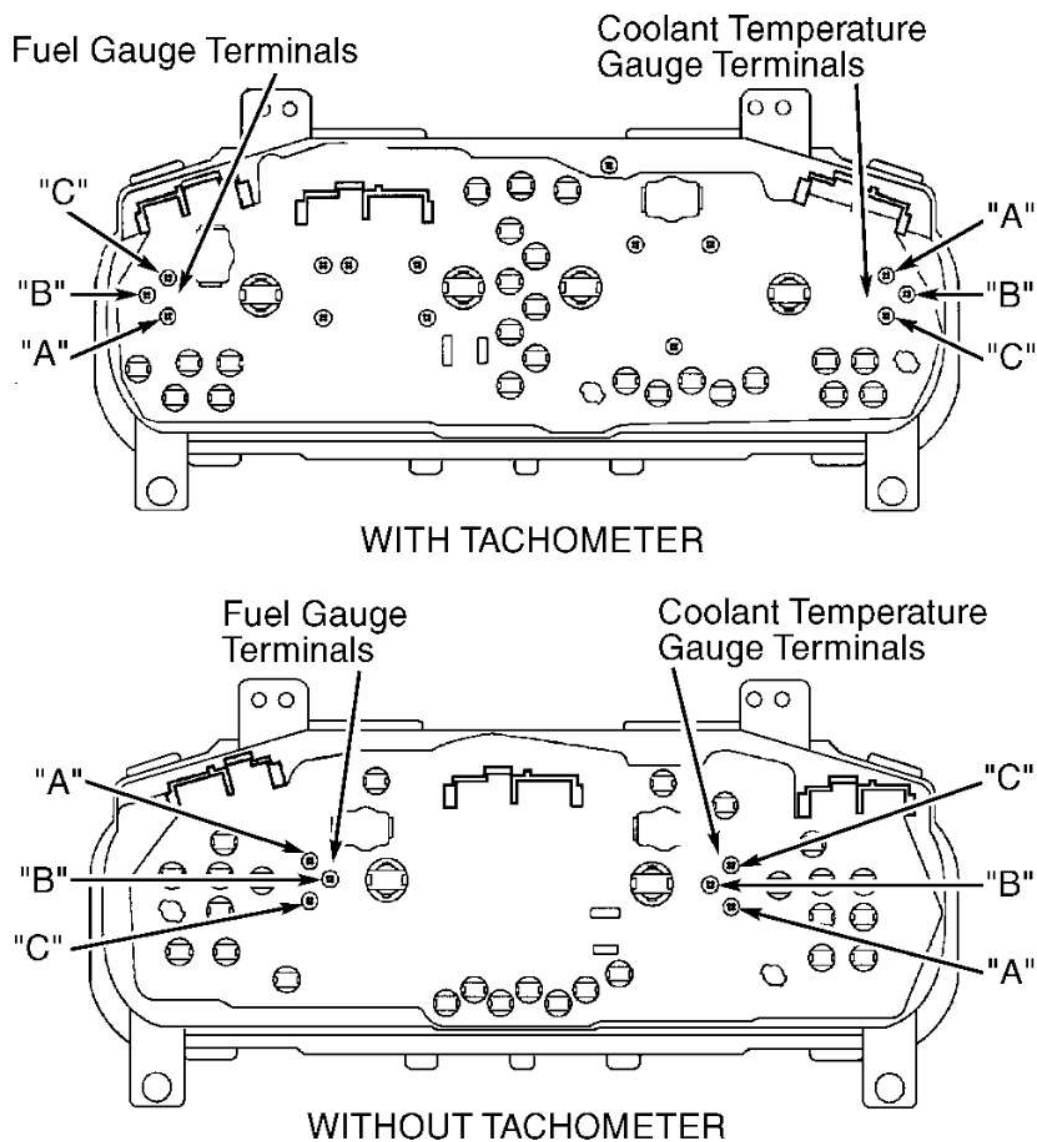


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Fig. 3: Identifying Fuel & Temperature Gauge Terminals (RAV4)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.



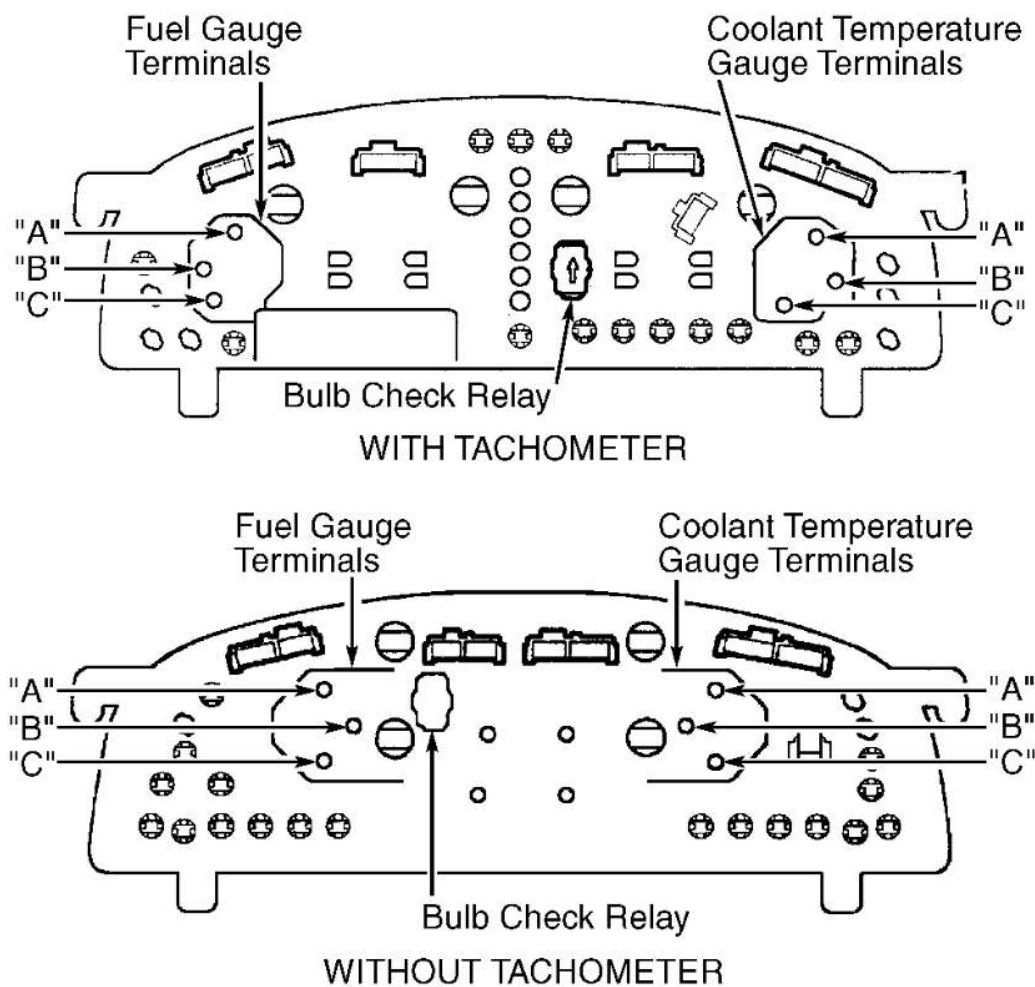
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Fig. 4: Identifying Fuel & Temperature Gauge Terminals (Sienna)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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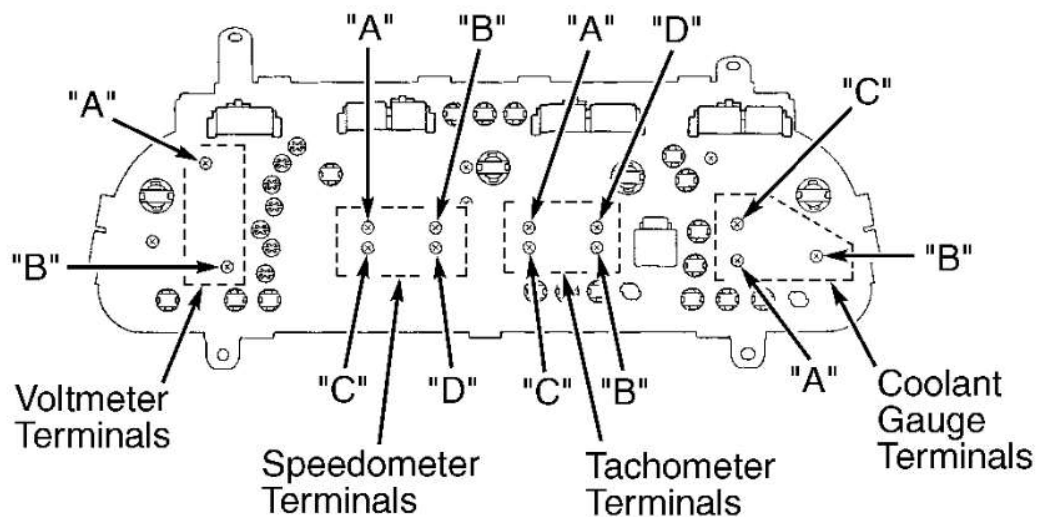


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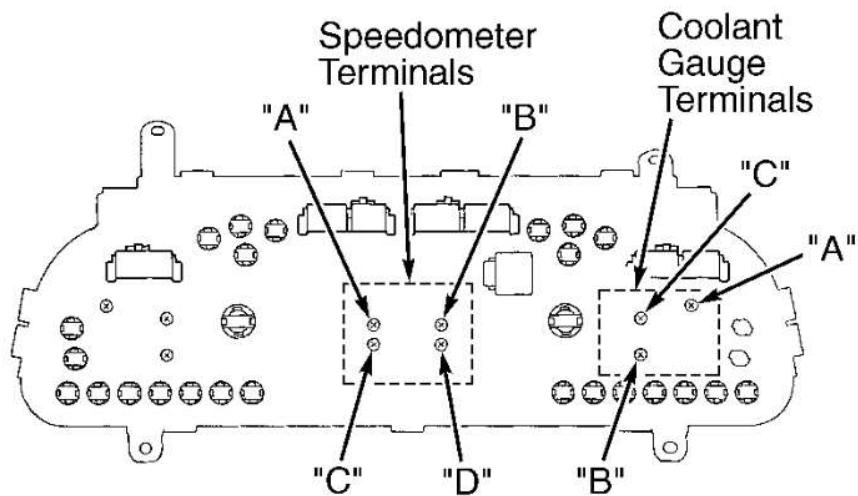
Fig. 5: Identifying Fuel & Temperature Gauge Terminals (Tacoma)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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WITH TACHOMETER



WITHOUT TACHOMETER

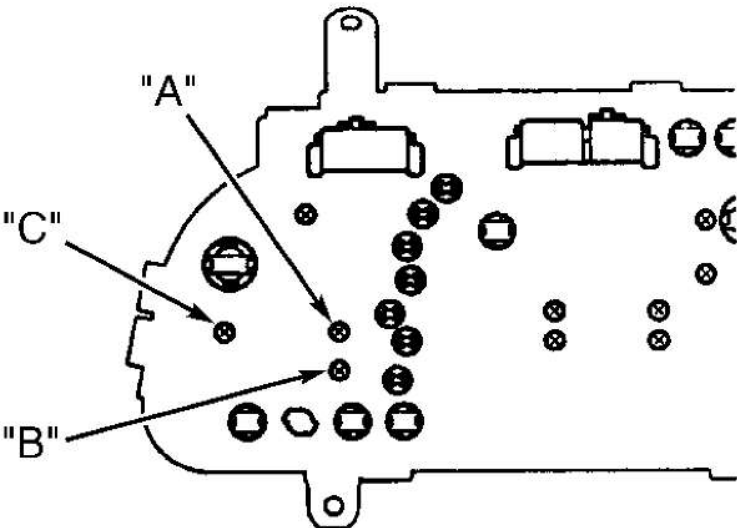
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Fig. 6: Identifying Gauge Test Terminals (Tundra)

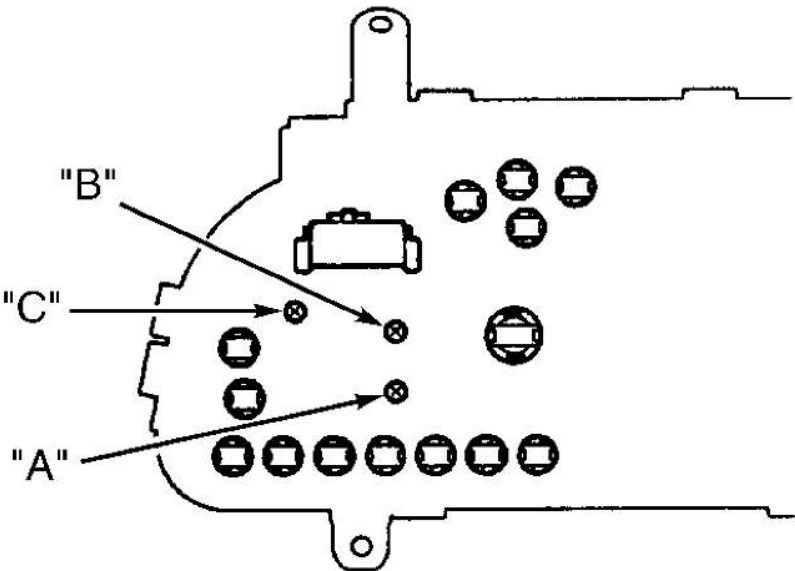
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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WITH TACHOMETER



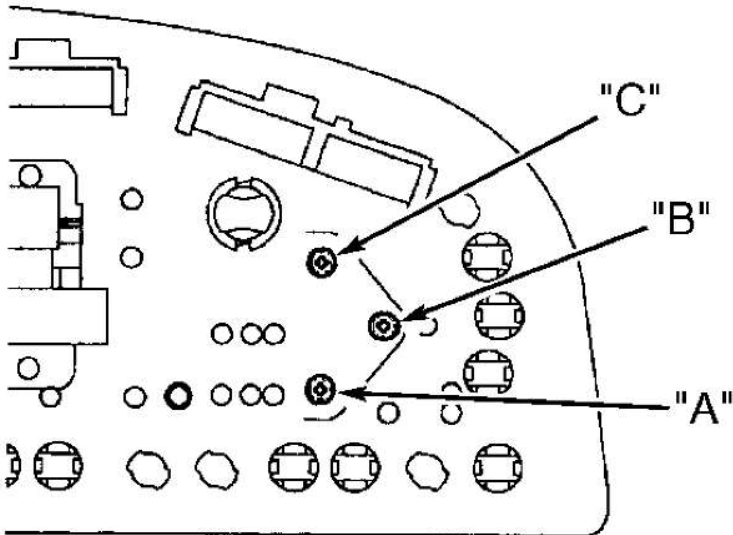
WITHOUT TACHOMETER

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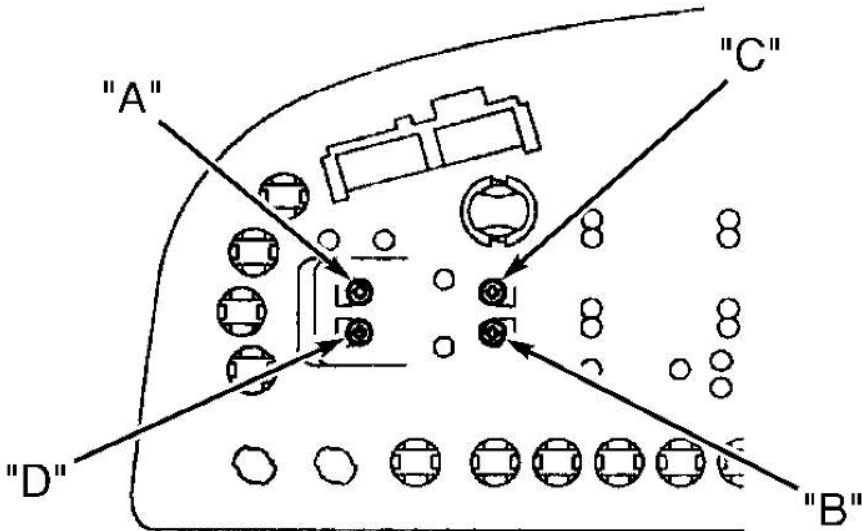
Fig. 7: Identifying Fuel Gauge Test Terminals (Tundra)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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COOLANT TEMPERATURE GAUGE TERMINALS



FUEL GAUGE TERMINALS

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Fig. 8: Identifying Fuel & Temperature Gauge Terminals (4Runner)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

FUEL GAUGE & WARNING LIGHT

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Fuel Gauge & Wiring Harness Operational Test (Land Cruiser & Tundra)

Disconnect Dark Gray 5-pin fuel tank sending unit connector. Turn ignition switch to ON position. If fuel gauge indicates EMPTY, check fuel gauge sending unit. See **FUEL GAUGE SENDING UNIT TESTS** . If fuel gauge does not indicate EMPTY, repair short in wiring harness. See **WIRING DIAGRAMS** .

Fuel Gauge & Wiring Harness Operational Test (RAV4)

1. Disconnect Dark Gray 5-pin fuel tank main sending unit connector. Turn ignition switch to ON position. If fuel gauge indicates EMPTY, go to next step. If fuel gauge does not indicate EMPTY, repair short in wiring harness. See **WIRING DIAGRAMS** .
2. Reconnect main sending unit connector. Disconnect Gray 2-pin fuel tank sub sending unit connector. Turn ignition switch to ON position. If fuel gauge indicates EMPTY, go to next step. If fuel gauge does not indicate EMPTY, repair short in wiring harness. See **WIRING DIAGRAMS** .
3. Disconnect Dark Gray 5-pin fuel tank main sending unit connector. Connect a 12-volt, 3.4-watt test light between terminal No. 3 of main sending unit wiring harness connector and terminal No. 1 of sub sending unit wiring harness connector. See **Fig. 9** and **Fig. 10** .
4. With ignition switch in ON position, test light should be on and gauge needle should move toward FULL. If test light is off and gauge needle does not move, check wiring harness for open. Repair as necessary. If wiring harness checks good, perform **FUEL GAUGE RESISTANCE TEST** .

Fuel Gauge & Wiring Harness Operational Test (Except Land Cruiser, RAV4 & Tundra)

1. Disconnect fuel tank sending unit connector. Turn ignition switch to ON position. If fuel gauge indicates EMPTY, go to next step. If fuel gauge does not indicate EMPTY, repair short in wiring harness. See **WIRING DIAGRAMS** .
2. Connect a 12-volt, 3.4-watt test light between appropriate terminals of sending unit wiring harness connector. See **FUEL GAUGE & HARNESS TEST** table. See **Fig. 9** and **Fig. 10** .
3. With ignition switch in ON position, test light should be on and gauge needle should move toward FULL. If test light is not on and gauge needle does not move, check wiring harness for open. Repair as necessary. If wiring harness is okay, perform **FUEL GAUGE RESISTANCE TEST** .

FUEL GAUGE & HARNESS TEST

Model	Sending Unit Harness Connector Terminals No.
Sienna, Tacoma & 4Runner	2 & 3

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Fig. 9: Identifying Fuel Sending Unit Harness Connector Terminals (Land Cruiser, RAV4 (Main Unit), Sienna, Tacoma & 4Runner)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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Fig. 10: Identifying Fuel Sending Unit Harness Connector Terminals (RAV4 - Sub Unit)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Low Fuel Warning Light (RAV4, Sienna, Tacoma With Tachometer & 4Runner)

Disconnect connector from fuel sending unit at fuel tank (main unit on RAV4). Connect a jumper wire between fuel sending unit wiring harness connector terminals No. 1 and 3. See **Fig. 9** and **Fig. 10**. Turn ignition on. Instrument cluster low fuel warning light should be on. If low fuel warning light is off, check bulb or wiring harness. Repair as necessary.

Low Fuel Warning Light Sensor Operational Test (RAV4, Sienna, Tacoma With Tachometer, Tundra & 4Runner)

1. Remove fuel sending unit from gas tank. Using a jumper wire, connect negative battery terminal to fuel sending unit terminal No. 3. See **Fig. 9** and **Fig. 10**. Using another jumper wire, connect a 12-volt, 3.4-watt test light between positive battery terminal and fuel sending unit terminal No. 1.
2. With sending unit float/sensor dry, test light should come on in about 40 seconds. With sending unit float/sensor submerged in gasoline or water, test light should turn off. If test light does not function as specified, replace fuel gauge sending unit.

Fuel Gauge Resistance Test

Remove instrument cluster. Disconnect cluster connectors. Using an ohmmeter, measure resistance between appropriate fuel gauge terminals on back of instrument cluster. See **Fig. 2 -Fig. 8**. See **FUEL GAUGE RESISTANCE SPECIFICATIONS** table. If resistance is not as specified, replace fuel gauge.

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FUEL GAUGE RESISTANCE SPECIFICATIONS

Application & Terminals	(1) Ohms
Land Cruiser	
"A" & "B"	160
"C" & "D"	160
RAV4	
"A" & "B"	106
"A" & "C"	256
"B" & "C"	150
Sienna	
"A" & "B"	262
"A" & "C"	107
"B" & "C"	154
Tacoma	
With Tachometer	
"A" & "B"	137
"A" & "C"	260
"B" & "C"	123
Without Tachometer	
"A" & "B"	160
"A" & "C"	84
"B" & "C"	244
Tundra	
With Or Without Tachometer	
"A" & "B"	83
"A" & "C"	268
"B" & "C"	160
4Runner	
"A" & "B"	151
"A" & "C"	254
"B" & "C"	103
(1) Specification is approximate.	

FUEL GAUGE SENDING UNIT

Fuel Gauge Sending Unit Voltage (Land Cruiser)

1. Remove fuel gauge sending unit. Connect three 1.5-volt dry-cell batteries together in series. See **Fig. 11** . At fuel gauge sending unit connector, connect positive lead from dry-cell assembly to terminal No. 2. Connect negative lead to terminal No. 3.
2. Measure voltage between terminals No. 1 and 3 of sending unit connector in each float position indicated

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in table. See **FUEL GAUGE SENDING UNIT VOLTAGE** table. If voltage is not as specified, replace sending unit.

FUEL GAUGE SENDING UNIT VOLTAGE

Float Position	(1) Distance From Center In. (mm)	Approximate Volts
Full	3.36 (85.3)	.2-.4
1/2 Full	.67 (1.7)	2.4-2.6
Empty	3.62 (91.9)	4.5-4.7

(1) See Fig. 11 .

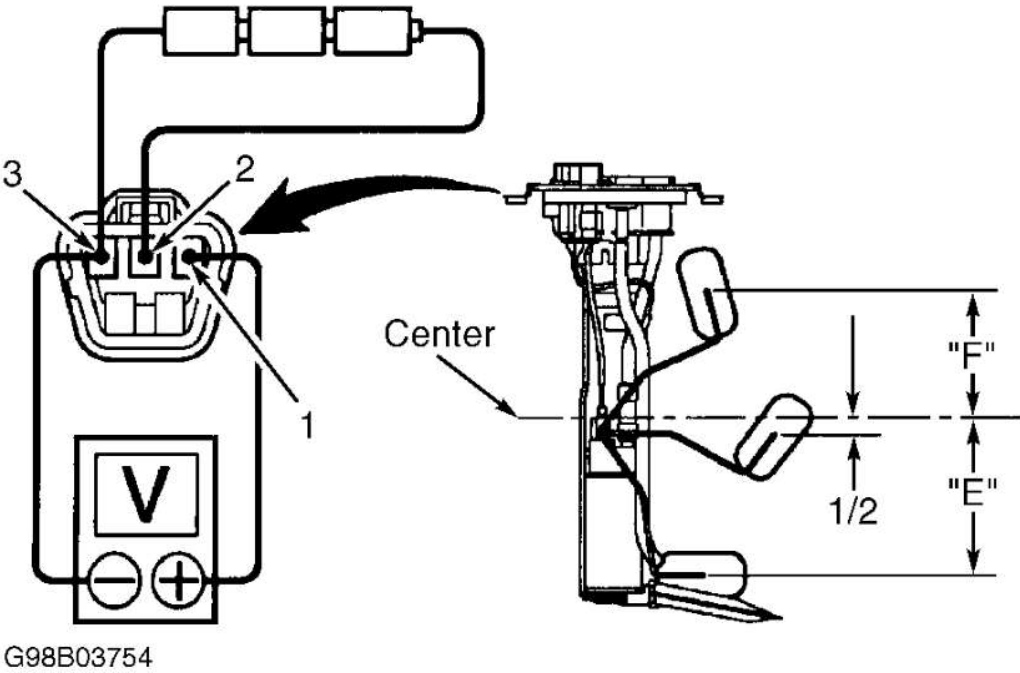


Fig. 11: Testing Fuel Gauge Sending Unit (Land Cruiser)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Fuel Gauge Sending Unit Resistance (Land Cruiser)

Resistance testing procedure for fuel sending unit is not available. To test fuel sending unit, see **FUEL GAUGE SENDING UNIT VOLTAGE (LAND CRUISER)** .

Fuel Gauge Sending Unit Resistance (RAV4 Main Unit)

1. Turn ignition switch to OFF position. Remove fuel sending unit from fuel tank. Connect ohmmeter between main sending unit terminals No. 2 and 3. See Fig. 9 .

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2. Move sender arm and ensure resistance is as specified. See **FUEL GAUGE SENDING UNIT RESISTANCE** table. If resistance is not as specified, replace sending unit.

Fuel Gauge Sending Unit Resistance (RAV4 Sub Unit)

Turn ignition switch to OFF position. Remove sub fuel sending unit. Connect ohmmeter between sub sending unit terminals. See **Fig. 10** . Move sender arm and ensure resistance is as specified. See **FUEL GAUGE SENDING UNIT RESISTANCE** table. If resistance is not as specified, replace sending unit.

Fuel Sending Unit Resistance (Sienna, Tacoma, Tundra & 4Runner)

Turn ignition switch to OFF position. Remove fuel sending unit from tank. Connect ohmmeter to appropriate terminals at fuel sending unit. See **FUEL GAUGE SENDING UNIT CONNECTOR TERMINALS** table. See **Fig. 9** . Move sender arm and ensure resistance is as specified. See **FUEL GAUGE SENDING UNIT RESISTANCE** table. If resistance is not as specified, replace sender.

FUEL GAUGE SENDING UNIT CONNECTOR TERMINALS

Application	Sending Unit Connector Terminals No.
Sienna, Tacoma & 4Runner	2 & 3
Tundra	1 & 2

FUEL GAUGE SENDING UNIT RESISTANCE

Float Position	Ohms
Full	
4Runner	184
All Other Models	3
Half	
4Runner	97
All Other Models	33
Empty	
4Runner	12
All Other Models	110

HAZARD WARNING SWITCH

NOTE: On Land Cruiser, center Electronic Control Unit (ECU) may also be known as A/C amplifier.

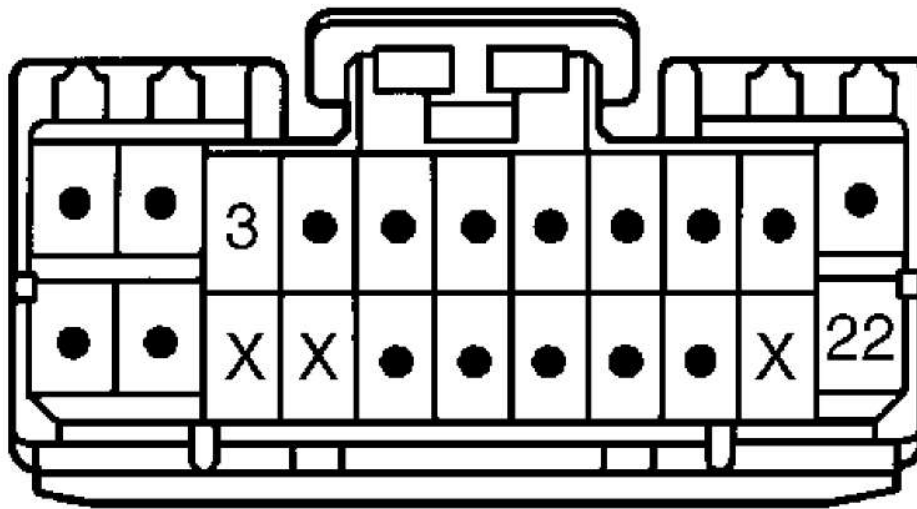
Land Cruiser

1. Ensure flasher is okay. For turn signal flasher testing, see STEERING COLUMN SWITCHES article. For turn signal flasher location, see **TURN SIGNAL FLASHER LOCATION** table. To test hazard switch/circuits, locate center ECU behind A/C control panel.
2. Turn ignition switch to OFF position. Using ohmmeter, check for continuity between 22-pin center ECU

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connector terminals No. 3 and 22. See **Fig. 12** . With hazard warning switch on, continuity should exist. With hazard warning switch off, no continuity should exist. If continuity is not as specified, replace hazard warning switch or repair wiring harness between hazard warning switch and center ECU.



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Fig. 12: Identifying Center ECU Connector Terminals (Land Cruiser)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Except Land Cruiser

1. Ensure flasher related fuses are good. Ensure flasher is good. For turn signal flasher testing, see **STEERING COLUMN SWITCHES** article. For turn signal flasher location, see **TURN SIGNAL FLASHER LOCATION** table.
2. With hazard warning switch removed from instrument panel, ensure battery voltage exists at switch wiring harness connector terminals No. 6 and 7 (Sienna and RAV4) or No. 8 and 10 (Tacoma, Tundra and 4Runner). See **Fig. 13** . If battery voltage does not exist, check/repair fuses and wiring circuit. If battery voltage exists, disconnect switch from connector.
3. Using ohmmeter, ensure continuity exists between indicated terminals with switch in specified positions. See **HAZARD WARNING SWITCH CONTINUITY** table. If continuity is not as specified, replace switch. If continuity is as specified, check wiring circuits. See **WIRING DIAGRAMS** .

TURN SIGNAL FLASHER LOCATION

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Model	Location
Land Cruiser	Behind Left Side Of Instrument Panel, Near Steering Column
Sienna & 4Runner	In Junction Block No. 1, Left Of Steering Column
RAV4	In Relay Block No. 5, Behind Left Kick Panel
Tacoma	Behind Left Side Of Instrument Panel, In Junction Block No. 1

HAZARD WARNING SWITCH CONTINUITY

Switch Position	Terminals No.	Continuity
Sienna ⁽¹⁾		
Off	5 & 7	Yes
On	1, 2 & 4; 5 & 6	Yes
4Runner ⁽²⁾		
Off	7 & 10	Yes
On	5, 6 & 9; 7 & 8	Yes
All Other Models ⁽²⁾		
Off	7 & 10	Yes
On	4, 5, 6 & 9; 7 & 8	Yes
(1) Terminals No. 8 and 9 are for switch illumination bulb.		
(2) Terminals No. 2 and 3 are for switch illumination bulb.		

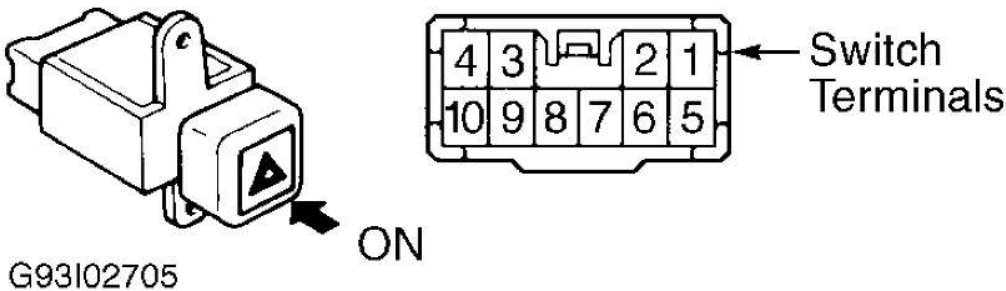


Fig. 13: Identifying Hazard Warning Switch Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

LIGHT CONTROL RHEOSTAT

Land Cruiser & Sienna

Remove light control rheostat on left side of instrument panel. Using jumper wires, connect battery positive

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voltage to terminal No. 1 and negative voltage to terminal No. 3. See **Fig. 14** . Check voltage between terminals No. 2 and 3. Voltage should change when knob is turned. If voltage does not change, replace rheostat light control.

RAV4, Tacoma, Tundra & 4Runner

1. Remove light control rheostat. Light control rheostat is located on left side of instrument panel. Using jumper wires, connect positive battery terminal to light control rheostat terminal No. 1 and negative battery terminal to terminal No. 2. See **Fig. 15** .
2. Connect a 12-volt, 3.4-watt test light between light control rheostat terminals No. 1 and 3. Slowly rotate light control rheostat knob counterclockwise from bright side to dark side. Test light should turn off. See **Fig. 15** .
3. Slowly rotate light control rheostat knob clockwise from dark side to bright side. Test light should change from dark to bright. If operation is not as specified, replace light control rheostat.

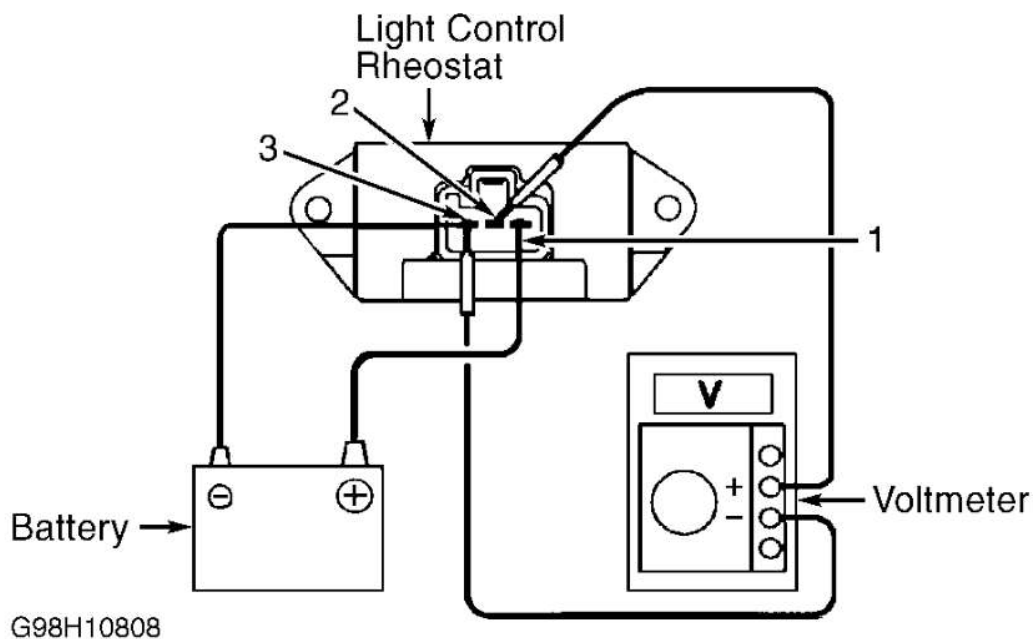


Fig. 14: Testing Rheostat Light Control (Land Cruiser & Sienna)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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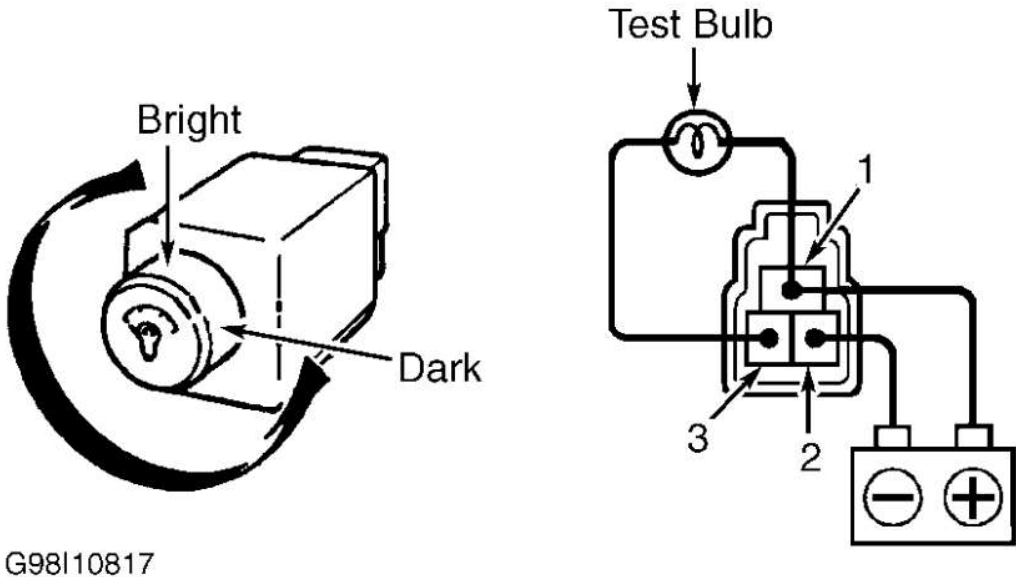


Fig. 15: Testing Rheostat Light Control (RAV4, Tacoma, Tundra & 4Runner)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

LOW OIL PRESSURE SWITCH

NOTE: Tundra models without a tachometer are equipped with an oil pressure switch. Tundra models with a tachometer are equipped with an oil pressure sender. For oil pressure sender testing, see OIL PRESSURE GAUGE & SENDER .

RAV4, Sienna, Tacoma, Tundra Without Tachometer & 4Runner

Disconnect low oil pressure switch connector. See OIL PRESSURE SWITCH LOCATION table. Using an ohmmeter, check for continuity between oil switch and ground. Continuity should exist with engine off. Continuity should not exist with engine running. If continuity is not as specified, replace low oil pressure switch.

OIL PRESSURE SWITCH LOCATION

Application	Location
RAV4	Rear Of Cylinder Head, Exhaust Side
Sienna	Lower Left Front Of Cylinder Block
Tacoma & 4Runner	
4-Cylinder	Right Side Of Cylinder Block
V6	Left Front Of Cylinder Block
Tundra	Beside Oil Filter

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LOW OIL PRESSURE WARNING LIGHT

RAV4, Sienna, Tacoma, Tundra Without Tachometer & 4Runner

Disconnect low oil pressure switch connector. See **OIL PRESSURE SWITCH LOCATION** table. Using a jumper wire, connect low oil pressure switch connector terminal to ground. Turn ignition switch to ON position. Low oil pressure warning light should turn on. If low oil pressure warning light is off, check bulb or inspect wiring harness.

OCCUPANT DETECTION SENSOR

Land Cruiser & Tundra

Disconnect occupant detection sensor connector, located under passenger seat. Check continuity between sensor connector terminals. Continuity should exist only when pressing on sensor. If continuity is not as specified, replace occupant detection sensor.

OIL PRESSURE GAUGE & SENDER

Oil Pressure Gauge & Harness Operational Test (Land Cruiser & Tundra With Tachometer)

1. Disconnect oil pressure sender connector. See **OIL PRESSURE SENDER LOCATION** table. Turn ignition switch to ON position. Oil gauge should indicate LOW. Turn ignition switch to OFF position. Connect a 12-volt, 3.4-watt test light between oil sending unit harness connector terminal and ground.
2. Turn ignition switch to ON position. Test light should be on and oil pressure gauge should slowly move to HIGH. If gauge functions as specified, perform **OIL PRESSURE SENDER OPERATIONAL TEST**. If gauge does not function as specified, perform **OIL PRESSURE GAUGE RESISTANCE TEST**.

Oil Pressure Sender Operational Test (Land Cruiser & Tundra With Tachometer)

Disconnect oil pressure sender connector. See **OIL PRESSURE SENDER LOCATION** table. Using 12-volt source, connect an LED tester between positive battery terminal and oil pressure sender terminal. With engine off, LED should be off. With engine running, LED should flash. LED flashes will vary with engine speed and oil pressure. Replace oil pressure sender if LED does not operate as specified.

OIL PRESSURE SENDER LOCATION

Application	Location
Land Cruiser & Tundra	On Oil Filter Housing

Oil Pressure Gauge Resistance Test (Land Cruiser & Tundra With Tachometer)

Remove instrument cluster. See **INSTRUMENT CLUSTER** under REMOVAL & INSTALLATION. Using an ohmmeter, check resistance between oil gauge terminals on rear of instrument cluster. See **Fig. 16** or **Fig. 17**. See **OIL PRESSURE GAUGE RESISTANCE SPECIFICATIONS** table. If resistance is not as specified, replace oil pressure gauge.

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OIL PRESSURE GAUGE RESISTANCE SPECIFICATIONS

Application & Terminals	Ohms
Land Cruiser	
Terminals A & B	44
Tundra With Tachometer	
A & B	25

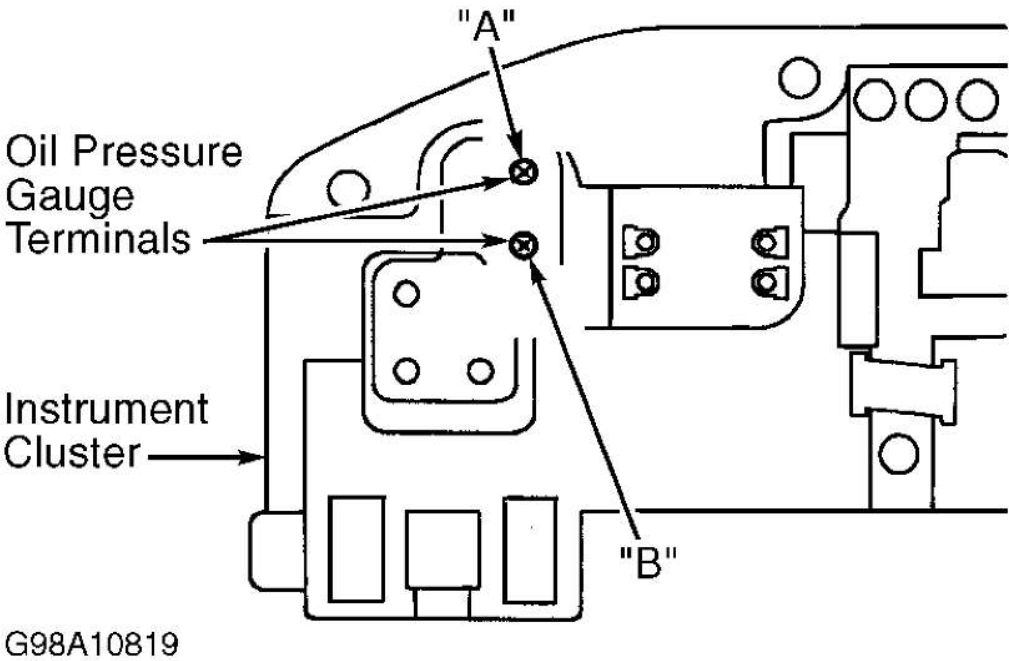


Fig. 16: Identifying Oil Pressure Gauge Terminals (Land Cruiser)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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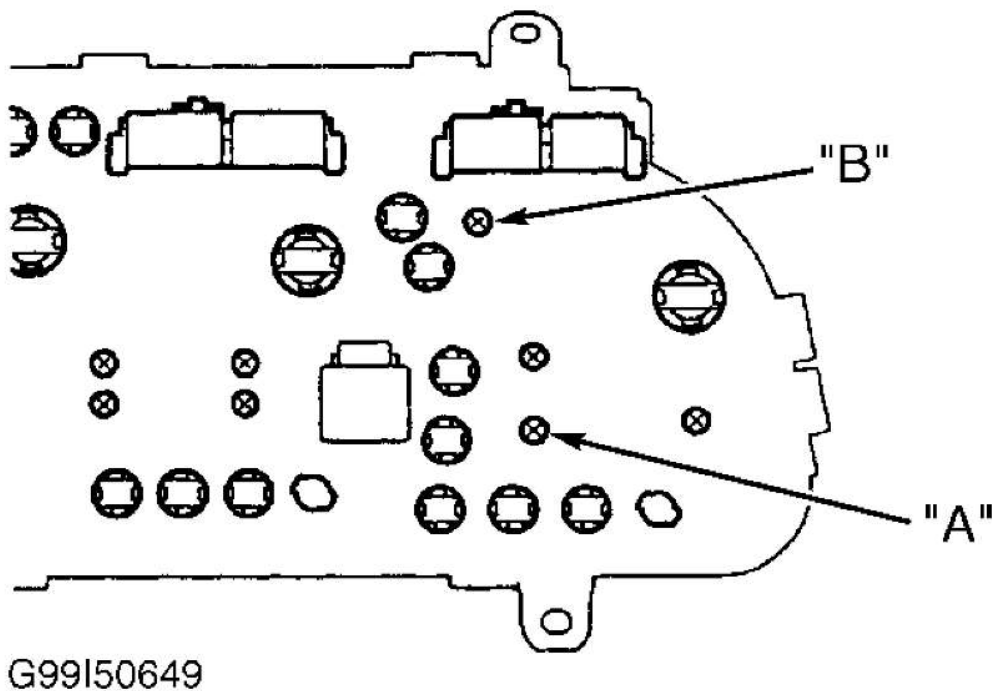


Fig. 17: Identifying Oil Pressure Gauge Terminals (Tundra)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OPEN DOOR WARNING LIGHT

Land Cruiser, Sienna, RAV4 & 4Runner

Locate door courtesy switch in door jamb. Disconnect door courtesy switch 1-pin connector. Ground door courtesy switch wiring harness connector terminal. Open door warning light should be on. If open door warning light is off, check bulb and wiring harness. Repair as necessary.

PARKING BRAKE SWITCH

Land Cruiser, Sienna, Tacoma, Tundra & 4Runner

Disconnect parking brake switch, located at base of parking brake handle. Ensure continuity exists between switch terminals when switch is ON (pin released). Ensure continuity does not exist between switch terminals when switch is OFF (pin pushed in). If continuity is not as specified, replace switch.

RAV4

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Disconnect parking brake switch, located at base of parking brake handle. Ensure continuity exists between switch terminal and switch body when switch is ON (pin released). Ensure continuity does not exist between switch terminal and switch body when switch is OFF (pin pushed in). If continuity is not as specified, replace switch.

SEAT BELT BUCKLE SWITCH**Land Cruiser, Tacoma, Tundra & 4Runner**

Disconnect seat belt buckle switch connector at bottom of inner seat belt. Check for continuity between seat belt buckle switch terminals. With seat belt buckle switch on (belt unfastened), continuity should exist. With seat belt buckle switch off (belt fastened), no continuity should exist. If continuity is not as specified, replace seat belt.

SEAT BELT RETRACTOR SWITCH**RAV4 & Sienna**

Disconnect seat belt retractor switch 2-pin connector. See **Fig. 18** . Check for continuity between seat belt retractor switch terminals. With seat belt retractor switch on (belt retracted), continuity should exist. With seat belt retractor switch off (belt fastened), no continuity should exist. If continuity is not as specified, replace seat belt retractor switch.

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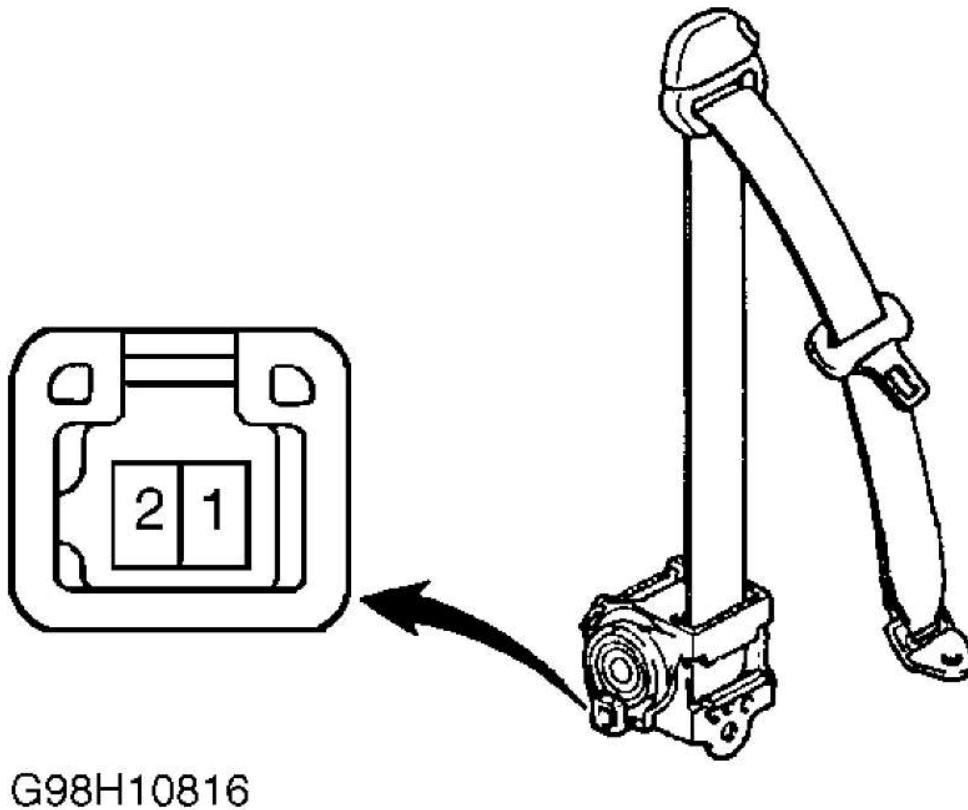


Fig. 18: Testing Seat Belt Retractor Switch (RAV4 & Sienna)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SEAT BELT WARNING LIGHT

Land Cruiser

Turn ignition switch to OFF position. Disconnect seat belt buckle switch connector at bottom of inner seat belt. Connect a jumper wire between seat belt buckle switch wiring harness connector terminals. Turn ignition on. Seat belt warning light should be on. If seat belt warning light is off, check bulb and wiring harness. Repair as necessary.

Sienna

Turn ignition switch to OFF position. Remove integration relay from instrument panel junction block No. 1, to left of steering column. Using a jumper wire, ground integration relay terminal No. 9 in junction block. See **Fig. 19**. Turn ignition switch to ON position. Seat belt warning light should be on. If seat belt warning light is off,

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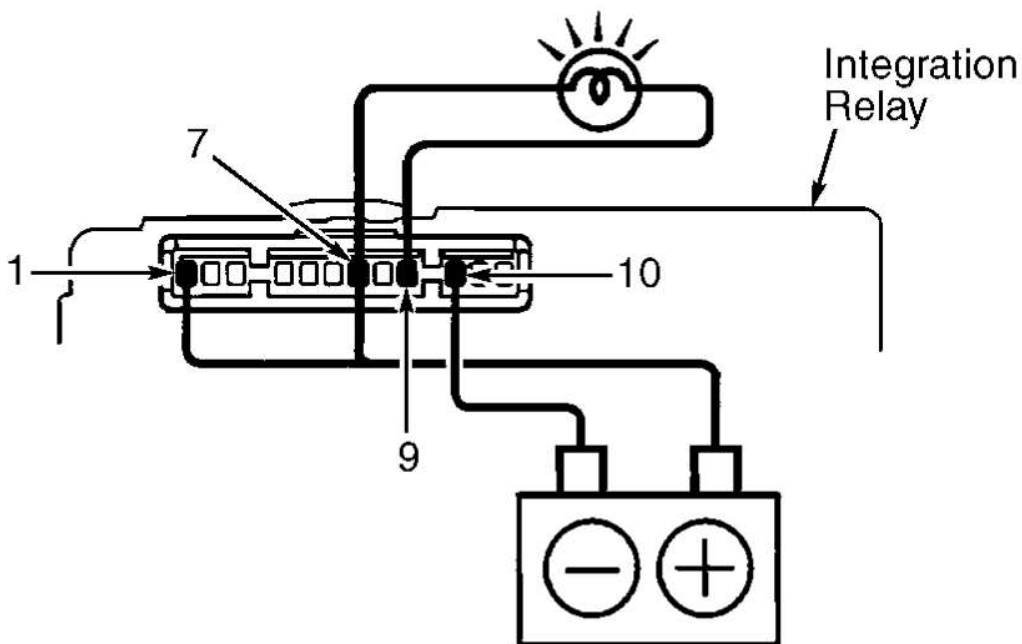
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check bulb and wiring harness. Repair as necessary.

SEAT BELT WARNING SYSTEM

Integration Relay Operation (Sienna)

1. Turn ignition switch to OFF position. Remove integration relay from junction block No. 1, to left of steering column. Using a jumper wire, connect positive battery terminal to integration relay terminals No. 1 and 7. See [Fig. 19](#) . Connect a 12-volt, 3.4-watt test light between integration relay terminals No. 7 and 9.
2. Using a jumper wire, connect negative battery terminal to integration relay terminal No. 10. Test light should be on and relay buzzer should sound for 4-8 seconds.
3. Repeat previous steps and operate relay buzzer again. With buzzer on, connect another jumper wire between negative battery terminal and integration relay terminal No. 8. Buzzer noise should stop. If operation is not as specified, replace integration relay.



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Fig. 19: Testing Integration Relay (Sienna)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SPEEDOMETER

Speedometer Operational Test (Land Cruiser)

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Ensure tires are correct size and inflated properly. Place vehicle on standard speedometer tester. Compare tester with speedometer readings. See **SPEEDOMETER TEST** table. If vehicle speedometer readings are not within allowable range, replace speedometer. If speedometer does not operate at all, check speedometer resistance. If speedometer resistance is okay, check vehicle speed sensor. See appropriate SYSTEM & COMPONENT TESTING article in ENGINE PERFORMANCE.

Speedometer Operational Test (Except Land Cruiser)

Ensure tires are correct size and inflated properly. Place vehicle on standard speedometer tester. Compare tester with speedometer readings. See **SPEEDOMETER TEST** table. If vehicle speedometer readings are not within allowable range, replace speedometer. If speedometer does not operate at all, check vehicle speed sensor. See SYSTEM & COMPONENT TESTING article in ENGINE PERFORMANCE.

SPEEDOMETER TEST

Standard Indication (MPH)	Allowable Range (MPH)
20	18-24
40	38-44
60	56-66
80	78-88
100	98-110
120	118-132

Speedometer Resistance (Land Cruiser & Tundra)

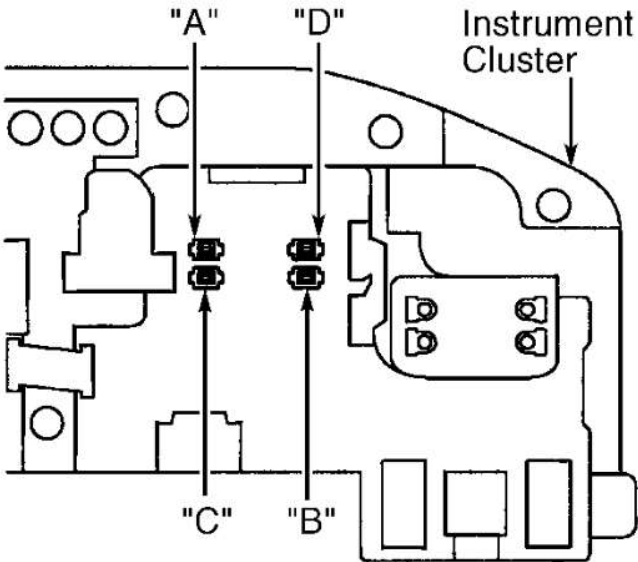
Remove instrument cluster. See **INSTRUMENT CLUSTER** under REMOVAL & INSTALLATION. Using an ohmmeter, check resistance between speedometer terminals on rear of instrument cluster. See **Fig. 6** and **Fig. 20**. See **SPEEDOMETER RESISTANCE** table. If resistance is not as specified, replace speedometer.

SPEEDOMETER RESISTANCE

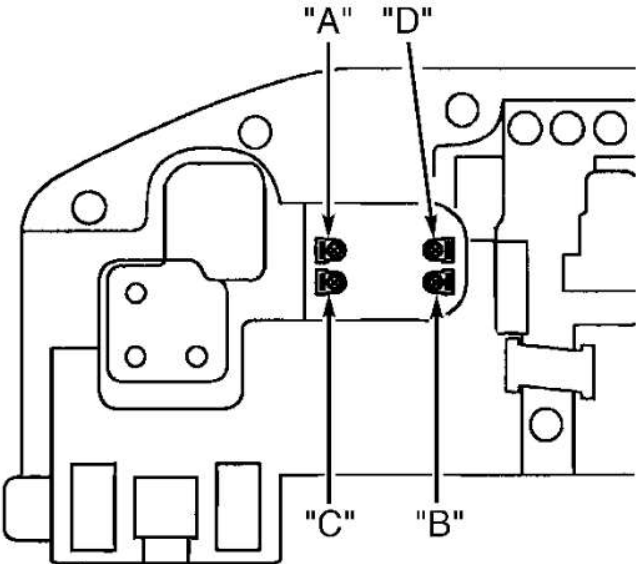
Application	Ohms
Land Cruiser & Tundra	
Terminals "A" & "B"	160
Terminals "C" & "D"	160

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SPEEDOMETER TERMINALS



TACHOMETER TERMINALS

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Fig. 20: Identifying Speedometer & Tachometer Terminals (Land Cruiser)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TACHOMETER

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Tachometer Operational Test

Connect a tune-up test tachometer and start engine. Compare vehicle tachometer RPM reading against test tachometer. If vehicle tachometer reading is outside allowable range, replace tachometer. See **TACHOMETER TEST** table.

TACHOMETER TEST

Vehicle RPM Reading	Allowable Range (RPM)
Land Cruiser, Sienna, RAV4, Tundra & 4Runner	
700	630-770
1000	900-1100
2000	1850-2150
3000	2800-3200
4000	3800-4200
5000	4800-5200
6000	5750-6250
7000	6700-7300
Tacoma	
700	630-770
3000	2850-3150
5000	4850-5150
7000	6790-7210

Tachometer Resistance (Land Cruiser & Tundra)

Remove instrument cluster. See **INSTRUMENT CLUSTER** under REMOVAL & INSTALLATION. Using an ohmmeter, check resistance between tachometer terminals on rear of instrument cluster. See **Fig. 6** and **Fig. 20**. See **TACHOMETER RESISTANCE** table. If resistance is not as specified, replace tachometer.

TACHOMETER RESISTANCE

Application & Terminals	Ohms
Land Cruiser	
"A" & "B"	160
"C" & "D"	160
Tundra	
"A" & "B"	140-185
"C" & "D"	130-175

VOLTMETER

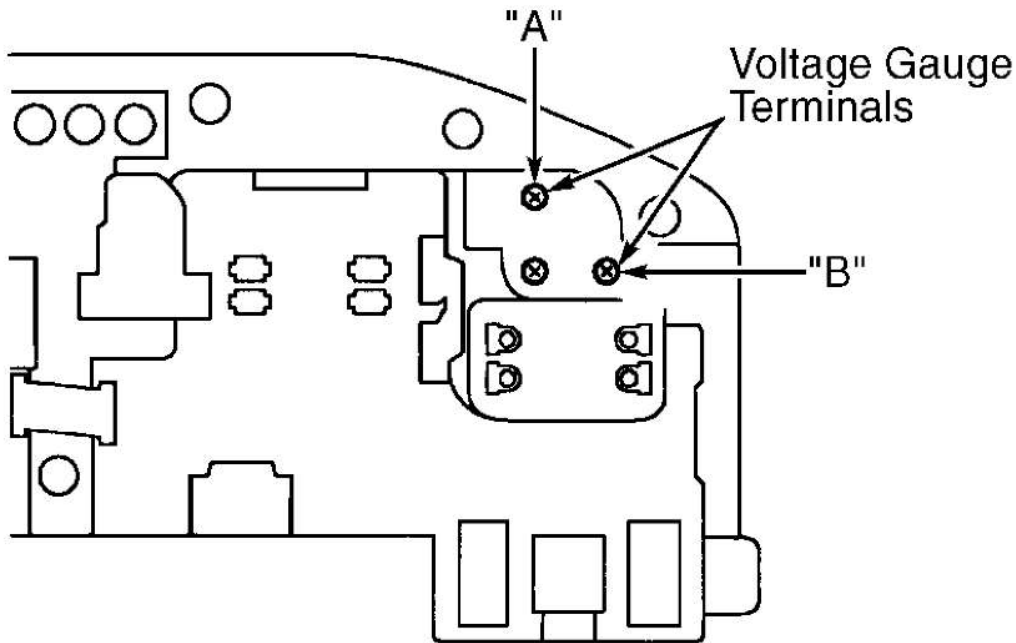
Land Cruiser & Tundra

Remove instrument cluster. See **INSTRUMENT CLUSTER** under REMOVAL & INSTALLATION. Using an ohmmeter, measure resistance between tachometer terminals on rear of instrument cluster. See **Fig. 6** and

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Fig. 21 . Resistance should be 347 ohms. If resistance is not as specified, replace tachometer.



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Fig. 21: Identifying Voltmeter Terminals (Land Cruiser)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

VEHICLE SPEED SENSOR

For vehicle speed sensor testing procedures, see SYSTEM & COMPONENT TESTING article in ENGINE PERFORMANCE.

WASHER LEVEL WARNING LIGHT

Sienna, RAV4, Tacoma, Tundra & 4Runner

Disconnect washer level switch connector. Connect a jumper wire between washer level switch wiring harness connector terminals. Turn ignition switch to ON position. Washer level warning light should be on. If washer level warning light is off, check bulb and wiring harness. Repair as necessary.

WASHER LEVEL WARNING SWITCH

Sienna, RAV4, Tacoma, Tundra & 4Runner

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Disconnect washer level warning switch connector. Check for continuity between washer level warning switch connector terminals. With washer level warning switch off (float up), no continuity should exist. With washer level warning switch on (float off), continuity should exist. If continuity is not as specified, replace washer level warning switch.

REMOVAL & INSTALLATION

WARNING: Deactivate air bag system before performing any service operation. See **AIR BAG RESTRAINT SYSTEMS** article. **DO NOT** apply electrical power to any component on steering column without first deactivating air bag system. Air bag may deploy.

INSTRUMENT CLUSTER**Removal & Installation (Land Cruiser)**

1. Disable air bag system, remove driver's air bag and steering wheel. See **AIR BAG RESTRAINT SYSTEMS** article. Remove steering column covers. Remove hood release and fuel door levers. Remove screws from instrument panel lower finish panel and remove panel.
2. Remove instrument cluster finish panel. Remove retaining screws from instrument cluster. Pull cluster outward enough to disconnect wiring harness connectors. Remove instrument cluster. To install, reverse removal procedure.

Removal & Installation (RAV4)

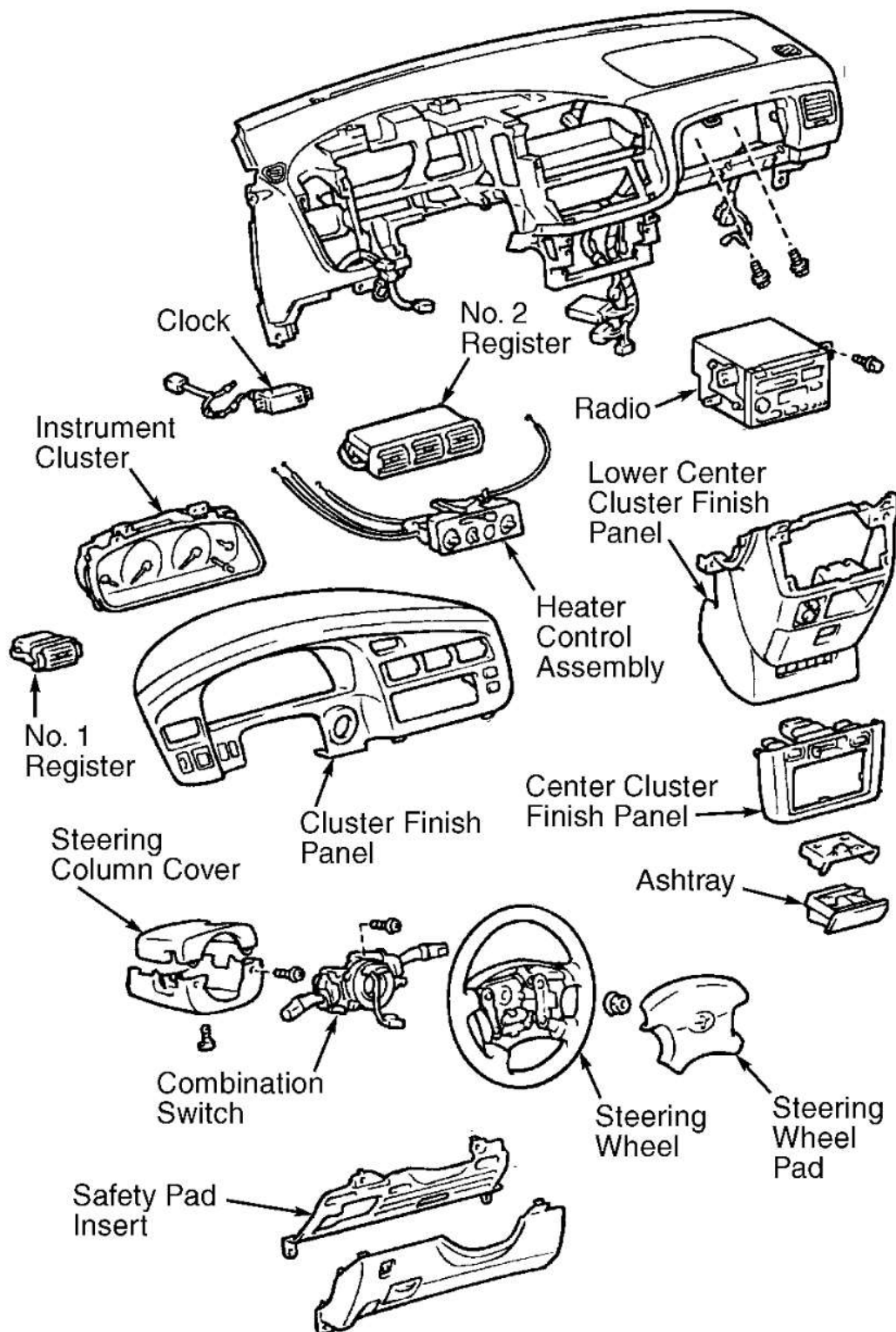
1. Disable air bag system, remove driver's air bag and steering wheel. See **AIR BAG RESTRAINT SYSTEMS** article. Remove steering column covers. Remove instrument cluster finish panel.
2. Remove 4 instrument cluster retaining screws. Pull cluster outward far enough to disconnect wiring harness connectors. Remove instrument cluster. To install, reverse removal procedure.

Removal & Installation (Sienna)

1. Disable air bag system, driver's air bag and steering wheel. See **AIR BAG RESTRAINT SYSTEMS** article. Remove steering column covers. Remove hood release lever. Remove lower finish panel and safety pad insert. See **Fig. 22**.
2. Using flat-blade screwdriver, pry center cluster finish panel loose from 4 retaining clips and remove panel. Remove ashtray. Remove lower center cluster finish panel. Remove instrument cluster finish panel. Remove clock, No. 1 register and No. 2 register from instrument cluster finish panel. Remove retaining screws from instrument cluster.
3. Pull cluster outward enough to disconnect wiring harness connectors. Remove instrument cluster. To install, reverse removal procedure.

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Fig. 22: Removing Instrument Panel (Sienna)

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Removal & Installation (Tacoma)

1. Disable air bag system, remove driver's air bag and steering wheel. See AIR BAG RESTRAINT SYSTEMS article. Remove lower finish panel. Remove steering column covers.
2. Remove starter switch bezel (if necessary). Remove cluster finish panel retaining screws. Using flat-blade screwdriver, pry instrument cluster finish panel loose from 3 retaining clips.
3. Remove 4 instrument cluster retaining screws. Pull instrument cluster out far enough to disconnect wiring harness connectors. Remove instrument cluster. To install, reverse removal procedure.

Removal & Installation (Tundra)

Disable air bag system, remove driver's air bag and steering wheel. See AIR BAG RESTRAINT SYSTEMS article. Remove steering column covers and combination switch. Remove combination meter finish panel. Remove combination meter. To install, reverse removal procedure.

Removal & Installation (4Runner)

1. Disable air bag system, remove driver's air bag and steering wheel. See AIR BAG RESTRAINT SYSTEMS article. Remove steering column covers. Remove 4 lower finish panel retaining bolts. Remove hood release and fuel tank lid release lever.
2. Using a screwdriver, carefully remove instrument panel lower finish panel. Remove ignition switch bezel. Disconnect air registers. Remove 4 retaining screws from instrument cluster finish panel. Carefully remove cluster finish panel. Disconnect wiring harness connectors.
3. Remove instrument cluster retaining screws. Pull cluster outward enough to disconnect wiring harness connectors. Remove instrument cluster. To install, reverse removal procedure.

WIRING DIAGRAMS

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Fig. 23: Instrument Panel Wiring Diagram (Land Cruiser - 1 Of 2)

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Fig. 24: Instrument Panel Wiring Diagram (Land Cruiser - 2 Of 2)

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Fig. 25: Instrument Panel Wiring Diagram (RAV4)

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Fig. 26: Instrument Panel Wiring Diagram (Sienna)

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Fig. 27: Instrument Panel Wiring Diagram (Tacoma - With Tachometer)

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Fig. 28: Instrument Panel Wiring Diagram (Tacoma - Without Tachometer)

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Fig. 29: Instrument Panel Wiring Diagram (2000 Tundra)

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Fig. 30: Instrument Panel Wiring Diagram (4Runner)